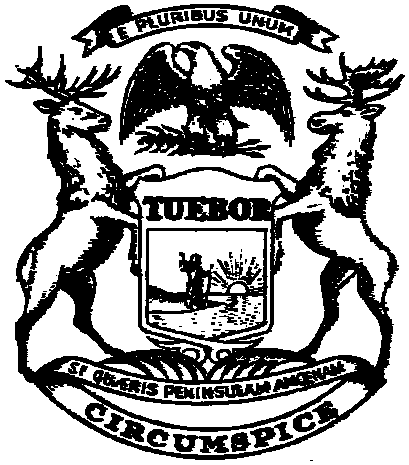
State of Michigan
And
United States Department of Energy

ENERGY EFFICIENCY PARTNERSHIP
Final Report



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Acronym Use in this Report

- **DOE** - United States Department of Energy
- **MIFEMP** - Michigan/Federal Energy Management Program Initiative
- **ESPC** - Energy Savings Performance Contract
- **ECO** - Energy Conservation Opportunity
- **USPS** - United States Postal Service
- **USCG** - United States Coast Guard
- **DOJ** - United States Department of Justice
- **GSA** - United States General Services Administration
- **CRSO** - DOE Chicago Regional Support Office
- **SEP** - State Energy Program
- **EO** – Energy Office/MI Department of Consumer & Industry Services

Acknowledgments

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Purpose

This report describes outcomes of a state/federal partnership effort to deliver established energy efficiency support services to federal facilities.

Relative to MIFEMP, this report covers –

- Background
- Strategies for reaching clients
- Accomplishments
- Recommendations & solutions

Background

Each year Congress authorizes and appropriates millions of dollars to federal agency operations and maintenance accounts for energy use, and for renovation, renewal or repair projects in buildings. Significant shares are spent on upgrading or repairing energy consuming systems. Yet, with individual building operations and maintenance budgets often very limited, many projects are done as inexpensively as possible or not at all. The Federal government is the largest single consumer of energy in the United States. A

significant amount of money is also spent to maintain these buildings, many of which were built before the energy crisis of the 1970s and are subsequently not energy efficient. Through the Energy Policy Act of 1992 (EPACT) and other administrative mandates, the Federal government has produced goals to reduce energy consumption per square foot. Approximately $5 billion of investment is necessary to repair or replace aging equipment in buildings between now and 2005 to meet the Government's goal of reducing energy use by one third. Michigan is one state in the FEMP Midwest Region that formed a partnership with FEMP to identify and assist federal facilities. Regionally, the Federal government recognizes that FEMP services to federal facility operators have not been sufficiently utilized. Consequently, FEMP is in transition to a new way of doing business. Strengthening FEMP regional operations involves developing dynamic partnerships with States. Within Michigan, federal facility managers have experimented with FEMP services on a chance basis. MIFEMP learned that perception of FEMP services can run the gamut from none to very aware. A recent survey conducted by EO disclosed that Michigan federal facility operators need education and/or technical assistance in areas affecting energy consumption in their facilities primarily in the areas of energy accounting, computerized energy management, preventive maintenance, building operating systems and procurement.

FEMP selected EO because of its considerable experience with institutional facilities and competence to advance FEMP mission statements and goals. Federal/state partnerships strengthen the local infrastructure, transfer the lessons learned, and increase the investment pool so more federal/state energy projects can be implemented. MIFEMP was established in FY 1997 and ended September 30, 1999. CRSO and a SEP Special Project Grant funding supported the project.

Objectives

MIFEMP simplified efforts to achieve energy and water efficiency in Michigan federal facilities by coordinating marketing and provision of energy efficiency services to these facilities. Secondarily, MIFEMP tried to motivate the use of energy savings performance contracting (ESPC), wherever feasible, in Michigan federal facilities. Specific objectives of MIFEMP were to:

- ***Educate*** federal facility managers on MIFEMP financial and technical support services, specifically ESPCs
- ***Furnish*** site-specific technical assistance to interested federal facility managers to help them estimate costs, energy savings and cost paybacks of energy/water conservation projects
- ***Develop*** relationships between Michigan federal facility managers, FEMP managers and energy efficiency service providers to facilitate project development and implementation through ESPCs

Services

MIFEMP utilized the Preliminary Energy Audit (PEA) process as a tool to identify cost-effective energy efficiency opportunities and develop utility profiles for Michigan-based federal facilities. Collectively, the MIFEMP contractor and EO engineer produced (36) written PEA reports. Follow up visits and phone calls to all MIFEMP clients provided feedback on their reports and helped EO ascertain which energy efficient opportunities (ECOs) would be implemented. MIFEMP also provided federal building operators/managers with:

- six 2-day hands-on building operator training workshops;
- twelve (12) quarterly technical bulletins;
- one (1) case study report on state facility energy performance contracts;
- notices on all TeleFEMP broadcasts with a downlink site hosted by EO;
- contact information for U.S. Department of Energy Midwest Super ESPC Delivery Order workshops.

Facts & Figures

Through MIFEMP –

- 865,038 square feet of federal floor space was analyzed for ECOs;
- $1,631,782 in ECO investment identified;
- $619,392 in annual energy cost savings calculated.

During the next 1-3 years, MIFEMP clients expect to disburse $844,608 to implement ECOs identified in MIFEMP PEA reports. This investment represents 52% of $1,631,782 - the total ECO investment identified in the thirty-six (36) MIFEMP PEA reports.

Table 1: Predicted ECO Investment/MIFEMP PEA Reports

Federal Agency	Total Investment	Average ECO Investment
USPS	$425,013	$38,638
GSA	$270,060	$5,401
DOJ	$97,910	$12,239
USCG	$51,625	$1,173
Total	$844,608	$14,363

Table 2: Predicted ECO Energy Cost Savings/MIFEMP PEA Reports

Federal Agency	Total Annual Energy Cost Savings	Average ECO Annual Energy Cost Savings
USPS	$197,529	$17,957
GSA	$93,282	$1,866
DOJ	$42,435	$6,602
USCG	$14,946	$340
Total	$348,192	$6,556

The total annual energy cost savings of $348,192 translates to fifty-six percent (56%) of $619,392 - the total annual energy cost savings identified in the thirty-six (36) MIFEMP PEA reports. The total of 107 ECOs likely to be implemented during the next 1-3 years translates to 47% of all ECOs identified in the thirty-six (36) MIFEMP PEA reports.

Table 3: Predicted Average ECO Simple Payback/MIFEMP PEA Reports

Federal Agency	Average ECO Payback	No. of MIFEMP PEA ECOs to be Funded
GSA	2.89	50
USCG	3.45	44
DOJ	2.02	8
USPS	2.15	5
Total	2.19	107

Table 4: Most Attractive ECO Types/MIFEMP PEA Reports

- *Upgrade to More Efficient Fluorescent Lighting*
- *Install DHW Tank Insulation & Flow Restrictors*
- *Install Water Use Reduction Kits*
- *Reduce Computer Monitor & TV Hours*
- *Install Programmable Thermostats*
- *Increase Boiler Efficiency*
- *Convert Incandescent Lamps to Fluorescent Lamps*
- *Install Modular Boilers*
- *Install LED Exit Lights*
- *Install Boiler Outside Air Resent Control*

Table 5: Analysis of ECO Cost Data/MIFEMP PEA Reports

High	Low	Average High	Average Low
$150,470	$40	$118,114	$3,326

Table 6: Analysis of ECO Annual Energy Cost Savings Data/MIFEMP PEA Reports

High	Low	Average High	Average Low
$150,470	$40	$118,114	$3,325

Table 7: Analysis of ECO Simple Payback Period/MIFEMP PEA Reports

High	Low	Average High	Average Low
24.2	.06	5.08	2.2

MIFEMP Preliminary Energy Audits

A MIFEMP PEA report contains –

- *a list of cost-effective ECOs*
- *a detailed building profile*
- *an energy use analysis*
- *a utility cost & consumption profile*

The energy use analysis includes an energy utilization index (EUI) in BTUs per square foot and a chart depicting the facility's annual energy cost/consumption for the various fuel types consumed by the facility. The EUI indicates the opportunity for energy efficiency improvement in the building.

Trends and Opportunities

MIFEMP found, generally speaking, that small federal buildings couldn't meet the minimum threshold in project costs to attract energy services companies (ESCos). By grouping building sites the threshold might be reached in certain situations. However MIFEMP also found federal building managers more apt to implement ECOs found in a PEA report rather than pursue the path to an ESPC project.

Future Challenges

MIFEMP demonstrated the workability of state/federal partnership to achieve more energy efficiency in federal buildings. The challenge is to work as a team with states to reach the goals of Executive Order 12902 even while states continue to help other public institutions procure energy efficiency services and equipment for their buildings.

Future Objectives

EO will continue to monitor the actions of MIFEMP clients to determine (1) if ECOs are actually implemented from the MIFEMP PEA reports and (2) if any detailed engineering studies were undertaken in response to information provided in the MIFEMP PEA reports. EO will also provide a new FY 2000 technical assistance program to federal/state agencies that will assist them with preparing specifications for energy efficiency equipment, selection of such equipment, and creation of utility demand profiles.